



Feature -

- good actuation feeling
- full color LED illuminated available
- long electrical life cycles
- SPDT or DPDT, lock / non-lock function

Application -

- instrumentation
- communication equipments

► SPECIFICATIONS

| SWITCH SPECIFICATIONS       |  |
|-----------------------------|--|
| POLE - POSITION             | ON - < ON > for Momentary Type ,<br>ON - ON for Self - Lock Type<br>SPDT , DPDT  |
| CONTACT RATING              | SEE CONTACT MATERIAL   |
| CONTACT RESISTANCE          | 50 mΩ MAX. ( SILVER CONTACT ) ;<br>100 mΩ MAX. ( GOLD PLATING CONTACT ) ,<br>1.5 V DC ; 100 mA , by Method of Voltage DROP |
| INSULATION RESISTANCE       | 100 MΩ MIN. 500 V DC   |
| DIELECTRIC STRENGTH         | Breakdown is not Allowable ;<br>1000 V AC for 1 Minute   |
| OPERATING FORCE             | 200 ± 100 gf ( SPDT )<br>300 ± 150 gf ( DPDT )   |
| OPERATING LIFE              | 200,000 cycles ( SILVER CONTACT )<br>200,000 cycles ( GOLD PLATING CONTACT )   |
| OPERATING TEMPERATURE RANGE | -20°C ~ 70°C   |
| TOTAL TRAVEL                | 2.2 ± 0.2 mm   |

| LED SPECIFICATIONS      |      | Value / LED Color                        |         |         |         |
|-------------------------|------|--|---------|---------|---------|
| ATTENTION               | Unit | Red                                      | Yellow  | Green   | Blue    |
|                         |      | LEDs are Electrostatic Sensitive devices |         |         |         |
| FORWARD CURRENT         | If   | mA                                       | 20      | 20      | 20      |
| REVERSE VOLTAGE         | Vr   | V  | 5.0     | 5.0     | 5.0     |
| REVERSE CURRENT         | Ir   | µA                                       | 10      | 10      | 10      |
| FORWARD VOLTAGE@20mA    | Vf   | V  | 1.7-2.2 | 1.7-2.2 | 1.8-2.4 |
| LUMINOUS INTENSITY@20mA | Iv   | mcd                                      | 230     | 230     | 410     |

■ Physical and electrical information of LED will be provided upon customer's request on switches .

► HOW TO ORDER

**L - MH 1 P N R 3 R 3 Q**

|                             |  |   |   |   |   |
|-----------------------------|--|---|---|---|---|
| <b>POLE</b>                 | <b>OPERATION</b>                                       | <b>CHIP QTY.</b>  | <b>CHIP QTY.</b>  | <b>DIFFUSER PLATE COLOR</b>   | <b>CAP COLOR</b>  |
| 1 1 POLE (std.)<br>2 2 POLE | N NON-LOCK (std.)<br>L LOCK TYPE (MH, ML, MHB, E TYPE) | 3 3 CHIPS<br>2 2 CHIPS<br>1 1 CHIP<br>X WITHOUT<br>- WHEN RGB | 3 3 CHIPS<br>2 2 CHIPS<br>1 1 CHIP<br>X WITHOUT<br>□ WHEN RGB | □ WHITE (std.)<br>R RED<br>G GRAY<br>B BLUE<br>Y YELLOW<br>N GREEN<br>W WHITE (When Indicate the cap color) | □ TRANSPARENT(std.)<br>R RED<br>G GRAY<br>B BLUE<br>Y YELLOW<br>N GREEN<br>T TRANSPARENT (When Indicate the diffuser color)<br>S SILVER |

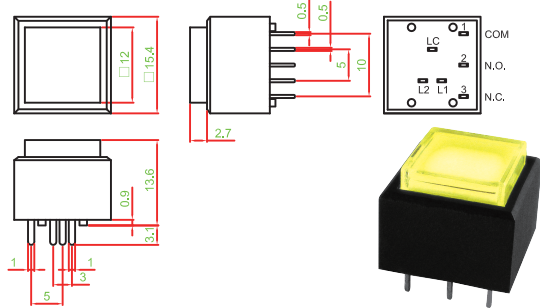
|                                    |  |   |
|------------------------------------|--|---|
| <b>TERMINAL</b>                    | <b>L1 chip</b>   | <b>L2 chip</b>  |
| P P.C.B TYPE (std.)<br>W WIRE TYPE | B BLUE<br>G GREEN<br>R RED<br>Y YELLOW<br>X WITHOUT<br>-RGB FULL COLOR | B BLUE<br>G GREEN<br>R RED<br>Y YELLOW<br>X WITHOUT<br>□ WHEN RGB |

|  |  |  |
|--|--|--|
| <b>FRAME TYPE</b>  | <b>CONTACT MATERIAL</b>  | <b>CAP SYMBOL</b>  |
| MH MH TYPE MHC PROTECTIVE GUARD MHCM MANUAL PROTECTIVE GUARD<br>ML ML TYPE MLC PROTECTIVE GUARD MLCM MANUAL PROTECTIVE GUARD<br>S S TYPE SC PROTECTIVE GUARD SCM MANUAL PROTECTIVE GUARD<br>E E TYPE EC PROTECTIVE GUARD ECM MANUAL PROTECTIVE GUARD<br>B B TYPE F F TYPE MHB MHB TYPE | Q MOVING CONTACTS : COPPER GOLD PLATING<br>TERMINALS : SILVER PLATING .<br>FIXED CONTACTS : BRASS , SILVER PLATING .<br>RATING : 25 V DC , 500 mA .<br>R CONTACTS & TERMINALS : COPPER , GOLD PLATING .<br>RATING : 28 V DC , 100 mA . | Please refer to appendix 1(knob)<br>For example<br>K3 PK3:Printing<br>K3L Laser carving<br>E1 PE1:Printing<br>E1L Laser carving<br>□ WITHOUT |

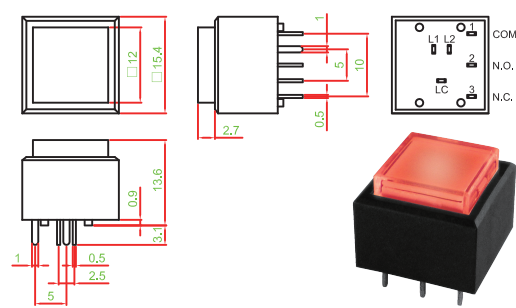


► DIMENSION & FRAME TYPE

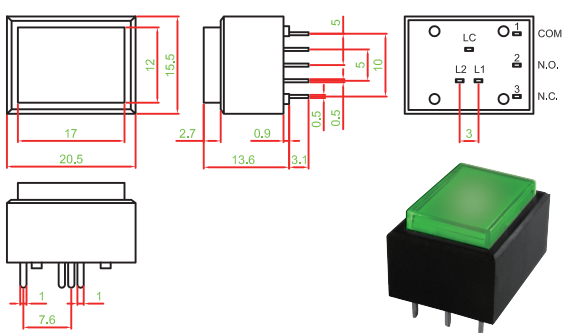
L - S1PN □□□□ Q



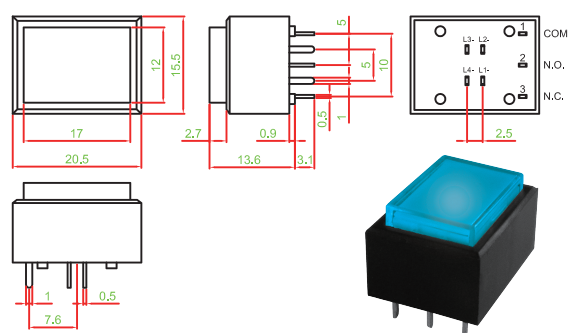
L - ML1PN □□□□ Q



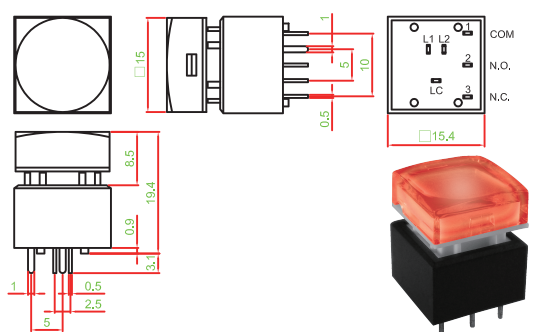
L - B1PN □□□□ Q



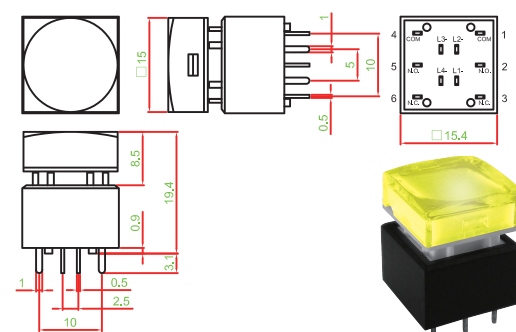
L - B1PN-RGB-Q



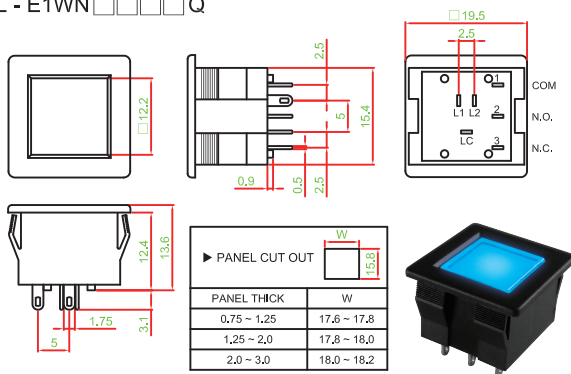
L - MH1PN □□□□ Q



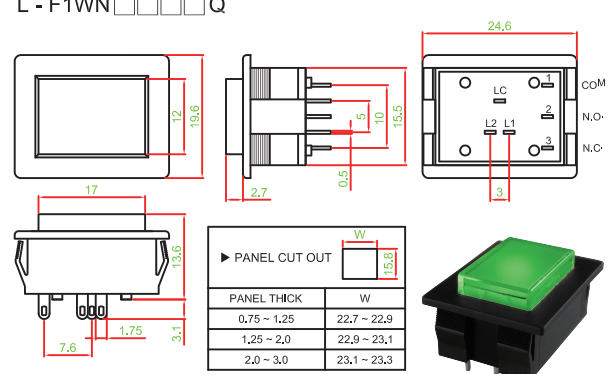
L - MH2PN-RGB-Q



L - E1WN □□□□ Q



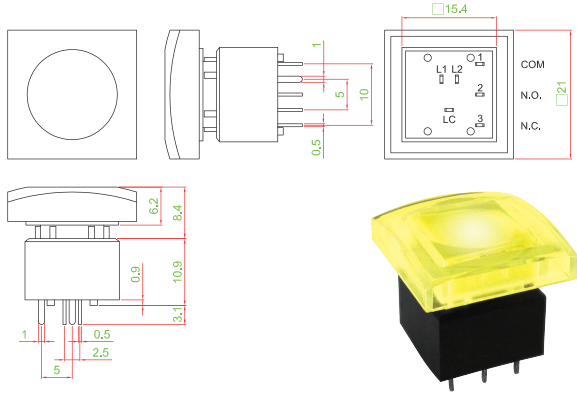
L - F1WN □□□□ Q



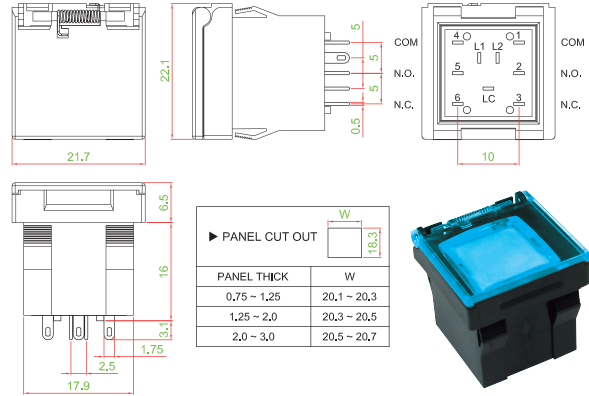


► DIMENSION & FRAME TYPE

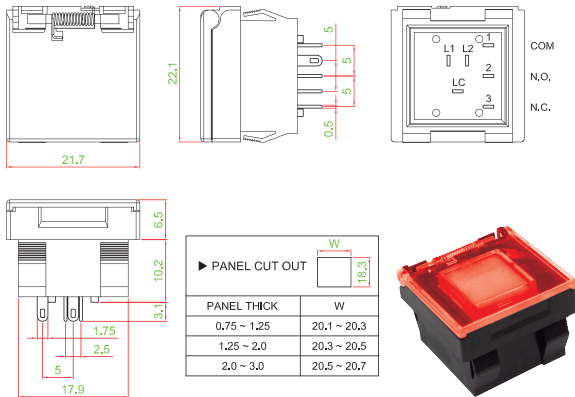
L - MHB1PN □ □ □ □ Q



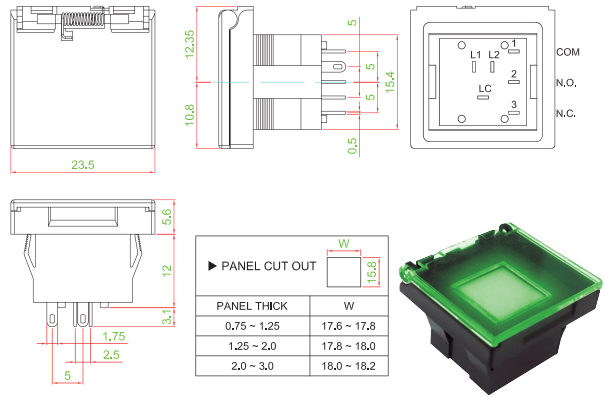
L - MHC2WN □ □ □ □ Q



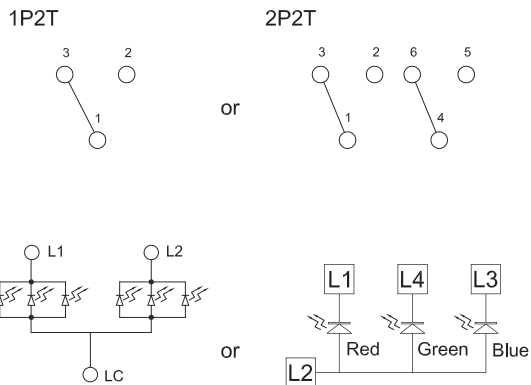
L - MLC1WN □ □ □ □ Q



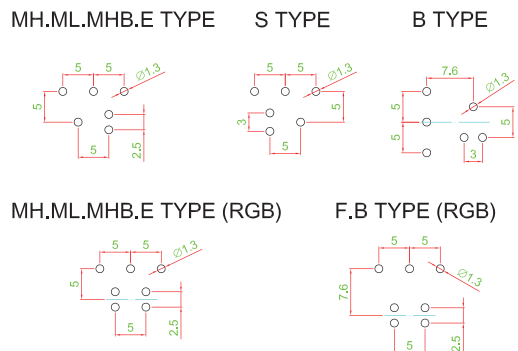
L - EC1WN □ □ □ □ Q



► CIRCUIT



► P.C.B LAYOUT



► MATERIAL

- COVER : PC
- ACTUATOR : POM
- BASE FRAME : PA + GF
- TERMINAL : Q : BRASS SILVER PLATING  
R : BRASS GOLD PLATING

|   | 0          | 1           | 2            | 3            | 4         | 5              | 6           | 7           | 8           | 9        | 10     | 11     | 12     | 13       | 14        | 15     | 16          | 17     | 18        | 19     |     |  |
|---|------------|-------------|--------------|--------------|-----------|----------------|-------------|-------------|-------------|----------|--------|--------|--------|----------|-----------|--------|-------------|--------|-----------|--------|-----|--|
| A | 0          | 1           | 2            | 3            | 4         | 5              | 6           | 7           | 8           | 9        | 10     | 11     | 12     | 13       | 14        | 15     | 16          | 17     | 18        | 19     |     |  |
| B | A          | B           | C            | D            | E         | F              | G           | H           | I           | J        | CH5    | CH6    | DSK    | PIP      | C-KEY     | CUT    | TAKE        | REC    | ENG       | PROD   |     |  |
| C | K          | L           | M            | N            | O         | P              | Q           | R           | S           | T        | REPLAY | RET1   | RET2   | KEY ON   | AUTO TAKE |        |             |        |           |        |     |  |
| D | U          | V           | W            | X            | Y         | Z              | POWER       | ON OFF      | ON          | OFF      |        | USER A | USER B | USER C   | USER D    | USER E | USER F      | USER G | USER H    | USER I |     |  |
| E | OK         |             | Auto         | Enter        | Start     | STOP           | OPEN        | CLOSE       | Exit        | Move     | USER J |        |        |          |           |        |             |        |           | M-1    |     |  |
| F | SET        | Reset       | Light        | Alarm        | Menu      | Next           | Back        | Delete      | Motor       | Save     |        |        |        |          |           | ✓1     | ✓2          |        |           |        |     |  |
| G | Up         | Down        | Right        | Left         | Test      | End            | Insert      | Lock        | Print       | +/-      |        |        |        |          |           |        | IN PORT     | SOS    |           | TC     |     |  |
| H | ESC        | BC.         | HOME         | Health       | D-LED 2   | OC GENE        | VIDEO INPUT | clr CMOS    | Green Power | Save OK  | P1     | P2     | P3     | P4       | P5        | DC     | AC          |        |           | TURBO  |     |  |
| I | B/R +      | Undo Cancel | T/L -        | F1           | F2        | F3             | F4          | F5          | F6          | F7       | SEEK   | TRACK  | RNA    | AS/RPT   | Select    |        | SET         | ON     | OFF       | UP     |     |  |
| J | F8         | F9          | F10          | F11          | F12       | F13            | F14         | IN 1        | IN 2        | IN 3     | TEST   | AUTO   | STOP   | OPEN     | MENU      | ON AIR |             | D.     | M.        |        |     |  |
| K | IN 4       | IN 5        | IN 6         |              |           |                |             |             |             |          |        |        |        |          |           |        | HDMI        | VGA    |           |        |     |  |
| L | +          | -           | x            |              | =         |                |             |             |             |          |        |        | MON    | ITEM     | C/S       | GAS    | PUMP ON/OFF | PURGE  | R/HR      | PARL   | IOD |  |
| M |            |             |              |              |           |                |             |             |             |          |        |        | FILL   | LO RANGE | MID RANGE | MID    | HI RANGE    | GPD    | EFF LEVEL |        |     |  |
| N |            |             |              |              |           |                |             |             |             |          |        |        |        |          |           |        |             |        |           |        |     |  |
| O |            |             |              |              |           |                |             |             |             |          |        |        |        |          |           |        |             |        |           |        |     |  |
| P |            |             |              |              |           |                |             | Config.     | TIME LINE   | ME1      | ME2    |        |        |          |           |        |             |        |           |        |     |  |
| Q | ME3        | ME4         | BOND 3D DVE1 | BOND 3D DVE2 | BUS COLOR | ME BUTTON LINK | *           | INSERT      | WIPE        |          |        |        |        |          |           |        |             |        |           |        |     |  |
| R |            | ALL         |              | VP           |           | COPY           |             | RECORD MODE |             |          |        |        |        |          |           |        |             |        |           |        |     |  |
| S |            |             | MUTE         |              |           |                |             |             |             |          |        |        |        |          |           |        |             |        |           |        |     |  |
| T |            | hold        | group        | m1           | m2        | m3             | m4          | m5          | t1          | t2       |        |        |        |          |           |        |             |        |           |        |     |  |
| U | s1         | s2          | chair        | undo         | redo      | touch          | store       | recall      | e1          | e2       |        |        |        |          |           |        |             |        |           |        |     |  |
| V | e3         | e4          | OC           |              |           | CLEAR          | CROSS WIND  | AMMO TEMP   | BARO PERSS  | AIR TEMP |        |        |        |          |           |        |             |        |           |        |     |  |
| W | BORE-SIGHT | CANT        | LEAD         | RANGE        | MRS       | ZERO           | TEST        | UD          | LR          |          |        |        |        |          |           |        |             |        |           |        |     |  |
| X | ID         | Disp        | MF           | CALL         |           | BAND           | SETUP       | MODE        | LINK        | FUNC.    |        |        |        |          |           |        |             |        |           |        |     |  |
| Y | SHIFT      |             |              |              |           | DEL            |             |             |             |          |        |        |        |          |           |        |             |        |           |        |     |  |
| Z |            |             | T            | RUN          | 2D        | 3D             | CH1         | CH2         | CH3         | CH4      |        |        |        |          |           |        |             |        |           |        |     |  |